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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/541,162   | 06/30/2005  | Koji Kikushima       | 14321.80            | 4381             |
| 22913  | 7590        | 06/29/2006           | EXAMINER            |                  |
| WORKMAN NYDEGGER<br>(F/K/A WORKMAN NYDEGGER & SEELEY)<br>60 EAST SOUTH TEMPLE<br>1000 EAGLE GATE TOWER<br>SALT LAKE CITY, UT 84111 |             |                      | SINGH, DALZID E     |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2613                |                  |

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/541,162

Applicant(s)

KIKUSHIMA, KOJI

Examiner

Dalzid Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because the structural elements of the figures 1-8 are merely labeled with identifying numbers. Applicant must supply a suitable legend. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application (see 37 CFR 1.84(n) and 1.84(o)). The following are quotation of 37 CFR 1.84(n) and 1.84(o):

(n) *Symbols*. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. **Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.**

(o) *Legends*. Suitable descriptive legends may be used subject to approval by the Office, or may be required by the examiner where necessary for understanding of the drawing. They should contain as few words as possible.

The objection to the drawings will not be held in abeyance.

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Swanson et al (US Patent No. 6,433,904).

Regarding claim 1, Swanson et al disclose a wavelength multiplex transmission system having a transmission apparatus and a receiving apparatus connected via an optical transmission line, shown in Fig. 4, wherein:

the transmission apparatus is configured to convert differential signals (from demux (50)) to optical signals to transmit to the optical transmission line; and

the receiving apparatus is configured to receive the optical signals from the optical transmission line to reproduce the differential signals.

Regarding claim 2, wherein the receiving apparatus further combines the reproduced differential signals (mux at the receiver combines the signal).

Regarding claim 3, wherein the receiving apparatus adjusts a time difference between the reproduced differential signals (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19).

Regarding claim 4, Swanson et al disclose a wavelength multiplex transmission system having a transmission apparatus and a receiving apparatus connected via an optical transmission line, shown in Fig. 4, wherein:

the transmission apparatus comprises;  $(N+M)$  optical transmitters (where  $N$  is an integer of 2 or more and  $M$  is an integer from 1 to  $N$ ) for transmitting input signals as optical signals with different wavelengths,  $M$  differential dividers (demux) for differentially dividing  $M$  input signals out of the input signals, respectively, and inputting the differentially divided signals into  $2 \times M$  optical transmitters out of the  $(N+M)$  optical transmitters, respectively, and a wavelength multiplex filter for wavelength multiplexing and outputting the  $(N+M)$  optical signals from the  $(N+M)$  optical transmitters, and wherein: the receiving apparatus comprises; a wavelength separation filter for separating the wavelength multiplexed optical signals to output  $(N+M)$  optical signals;  $(N+M)$  optical receivers for receiving the  $(N+M)$  optical signals from the wavelength separation filter, respectively, to output signals; and  $M$  differential combiners, each differentially combining (mux) the output signals from the two optical receivers receiving a pair of optical signals which have been differentially divided and transmitted, out of the  $(N+M)$  optical receivers, to output one signal (see col. 5, lines 3-32 and col. 8, lines 22-65).

Regarding claim 5, wherein the transmission apparatus inputs two corresponding signals from one differential divider (demux) into two optical transmitters, respectively, and transmits them as optical signals with adjacent wavelengths.

Regarding claim 6, wherein the receiving apparatus is further provided with a delay time controller for adjusting delay time difference between a pair of optical signals on the optical transmission line, at the preceding stage of the differential combiner (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19; the synchronization circuit provide time adjustment).

Regarding claim 7, Swanson et al disclose optical transmission comprising:  
optical conversion means for converting differential signals to optical signals; and  
optical transmission means for transmitting the converted optical signals (see Fig. 4).

Regarding claim 8, wherein the optical conversion means converts the differential signals to optical signals with different wavelengths; and the optical transmission means multiplexes the optical signals with different wavelengths to transmit.

Regarding claim 9, wherein the system further comprising differential divider means for dividing an input signal to the differential signals (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19).

Regarding claim 10, Swanson et al disclose transmission apparatus, shown in Fig. 4, comprising:

(N+M) optical transmitters (where N is an integer of 2 or more and M is an integer from 1 to N) for transmitting input signals as optical signals with different wavelengths; M differential dividers for differentially dividing M input signals out of the input signals, respectively, and inputting the differentially divided signals into 2.times.M optical transmitters out of the (N+M) optical transmitters, respectively; and a

wavelength multiplex filter for wavelength multiplexing the (N+M) optical signals from the (N+M) optical transmitters to output (see col. 5, lines 3-32 and col. 8, lines 22-65).

Regarding claim 11, the transmission apparatus further inputting two corresponding signals from one differential divider into two optical transmitters, respectively, and transmitting them as optical signals with adjacent wavelengths.

Regarding claim 12, Swanson et al disclose receiving apparatus for receiving optical signals including differential signals, shown in Fig. 4, comprising:

optical receiving means for receiving the optical signals; and optical conversion means for reproducing the differential signals from the optical signals (see col. 5, lines 3-32 and col. 8, lines 22-65).

Regarding claim 13, wherein the differential signals are wavelength-multiplexed as optical signals with different wavelengths; and the optical conversion means reproduces the differential signals from the optical signals with different wavelengths.

Regarding claim 14, the apparatus further comprising differential combining means (mux) for combining the reproduced differential signals.

Regarding claim 15, the apparatus further comprising time difference control means for adjusting time difference between the reproduced differential signals (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19).

Regarding claim 16, Swanson et al disclose a receiving apparatus, as shown in Fig. 4, comprising:

a wavelength separation filter for separating a wavelength multiplexed optical signal to output  $(N+M)$  optical signals (where  $N$  is an integer of 2 or more and  $M$  is an integer from 1 to  $N$ );  $(N+M)$  optical receivers for receiving the  $(N+M)$  optical signals from the wavelength separation filter, respectively, to output signals; and  $M$  differential combiners for differentially combining the output signals from two optical receivers receiving a pair of optical signals out of the  $(N+M)$  optical receivers, to output one signal (see col. 5, lines 3-32 and col. 8, lines 22-65).

Regarding claim 17, the apparatus further comprising a delay time controller for adjusting delay time difference between the pair of two optical signals on the optical transmission line, at the preceding stage of the differential combiner (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19; it is inherent that there must be controller to control the time adjustment).

Regarding claim 18, wherein the receiving apparatus adjusts a time difference between the reproduced differential signals (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19).

Regarding claim 19, wherein the receiving apparatus is further provided with a delay time controller for adjusting delay time difference between a pair of optical signals on the optical transmission line, at the preceding stage of the differential combiner (see Fig. 5, and col. 8, lines 66-67 to col. 9, lines 1-19; the synchronization circuit provide time adjustment).



Regarding claim 20, as shown in Fig. 4, Swanson et al show differential divider means (demux) for dividing an input signal to the differential signals.

Regarding claim 20, as shown in Fig. 4, Swanson et al show differential combining means (mux) for combining the reproduced differential signals.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishio et al (US Patent No. 5,404,240) is cited to show optical switching system for optical wavelength-division and time-division multiplexed signals.

Suzuki et al (US Patent No. 6,775,478) is cited to show optical TDM multiplexer, optical TDM demultiplexer, EDM/TDM converter and TDM/WDM converter.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS  
June 26, 2006

*David Singh*